REMARKS

Claims 1-18 are currently pending in the Application. In an office action dated October 3, 2003 ("Office Action"), the Examiner objected to the title, objected to the Summary of the Invention section, objected to claims 3, 8, 10, 14, and 18, rejected claims 1-2, 4-5, 9, 11, and 12 under 35 U.S.C. § 102(e) as being anticipated by Dobbeck, U.S. Patent No. 6,535,995 ("Dobbeck"), rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Dobbeck, rejected claims 3, 13, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Dobbeck in view of Jeddeloh, U.S. Patent No. 5,933,852 ("Jeddeloh"), rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Dobbeck in view of Venkatesh et al., U.S. Patent No. 6,397,292 ("Venkatesh"), rejected claims 7-8 and 15 as being unpatentable over Dobbeck in view of Smith, U.S. Patent No. 6,269,432 ("Smith"), and conditionally allowed claims 14, 16, and 18 providing that three independent claims are rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's representative would like to first thank the Examiner for the conditional allowance of claims 14, 16, and 18. Applicant's representative defers rewriting claims 14, 16, and 18 at this time, until the Examiner considers the following traversal of the claim rejections, but may elect to do so in a subsequent response. Applicant's representative also thanks the Examiner for a careful reading of the application, and, in particular, for the Examiner's attention to the claim language. Applicant's representative has endeavored to amend claims 3, 8, 10, 14, and 18, above, as suggested by the Examiner, in order to overcome the Examiner's objections to the claims. With regard to the Examiner's objection to the title, Applicant's representative has amended the heading of the Abstract to bring that heading into conformance with both the originally submitted title of the Specification and the title on the Information Disclosure Statement. Applicant's representative intended for the title to read "Method and System for Data Block Sparing in a Solid-State Storage Device." With regard to the language of the Summary of the Invention section, Applicant's representative intended the phrase "...number of replacement, or spare, data blocks" to read as it was originally submitted. The conjunctive in that phrase indicates that replacement data blocks can be

alternatively referred to as "spare data blocks," and is correct English. Applicant's representative respectfully traverses the Examiner's 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) rejections of claims 1-13, 15, and 17, for the reasons stated in the following paragraphs.

Both Applicant's representative and Applicant appreciate and understand that bad-block replacement schemes have been employed for magnetic disk drives for many years. Applicant states, in the Background of the Invention section, beginning on line 15 of page 1:

> As with any physical material, the surfaces of rotating magnetic media are subject to manufacturing defects and defects that arise during use due to mechanically and electrically induced stresses. In order to enhance the reliability of magnetic media, sophisticated defect-circumventing mechanisms have been developed to map defective data storage regions of a magnetic medium to available, unused, spare data storage regions provided on the magnetic medium. *A variety of methods for remapping defective areas have been developed and are currently in use.* Most depend on provision of extensive lookup tables that are interspersed with data-containing regions of the magnetic medium. (emphasis added)

By contrast, Applicant has clearly claimed a solid-state, electronic-memory device. Consider, for example, claim 1, provided below for the Examiner's convenience:

> 1. A *solid-state storage device* comprising:
>
> a *physical electronic memory* including a spare table region containing spare tables, a spare page region containing spare pages, and a data page region containing data pages;
>
> *an electronic memory interface* that provides, to devices that access the electronic memory, memory operations directed to target data blocks specified by the accessing device via a logical data block address; and
>
> a logic component that maps a logical data block address to a physical address describing the location of a data block in the *electronic memory.* (emphasis added)

Please note that Applicant's have explicitly claimed a "solid-state storage device" that includes "a physical electronic memory." As Applicant has carefully pointed out, on page 2 of the specification in the Background of the Invention section, providing spare memory cells for solid-state, electronic memories involves different considerations and

constraints than providing bad-block replacement in magnetic disk drives:

> Just as regions of the surfaces of magnet disk drives may contain manufacturing defects, or may become defective through use, data-storage cells within an electronic memory may be defective upon manufacture or may fail during use. Just as in magnetic disk drives, solid-state storage devices need to provide enhanced overall reliability by detecting defective memory cells and providing spare memory cells as substitutes for defective memory cells. However, magnetic data storage medium is relatively cheap, so that use of a relatively large fraction of the physical data storage medium for remapping tables in magnetic disk drives does not significantly increase the overall cost of a magnetic disk drive. Moreover, because of relatively long latency times for data access, arising from the need to mechanically position read/write heads over a target data storage region, complex remapping calculations may be undertaken in magnetic disk drives without significantly increasing access times and decreasing data transfer rates. In solid-state storage devices, by contrast, the physical storage medium is expensive, and therefore the use of a relatively large fraction of the medium for remapping tables can significantly increase the overall price of a solid-state storage device and significantly decrease the solid-state storage device's cost effectiveness in a given application, and complex remapping calculations directly increase access times and decrease data transfer rates. For these reasons, designers, manufacturers, and users of solid-state storage devices have recognized the need for a method and system for dynamically substituting spare memory cells to replace defective memory cells in the solid-state storage device that does not employ large remapping tables and complex remapping calculations.

Applicant's representative has carefully and repeatedly read Dobbeck's Specification, and has found no indication or broadening language to suggest that Dobbeck has disclosed, or intended to disclose, a method or system related to solid-state electronic memories. Dobbeck consistently refers to a "direct access storage device (DASD)" (Dobbeck, Abstract, line 1). Dobbecks system includes "a virtual track (VT) table and a virtual sector (VS) table" (Dobbeck, Abstract, lines 3-4), both obvious references to magnetic-disk tracks and sectors. In the Background of the Invention section, Dobbeck states that a "computer direct access storage device (DASD), such as a magnetic disk drive, has one or more disk platters, each with a magnetizable layer on its surface" (Dobbeck, column 1, lines 12-14). Clearly, a DASD necessarily encompasses some type of magnetic disk drive. Electronic memories do not have disk platters. Therefore, Dobbeck definitely does not disclose, teach, suggest, or mention anything related to solid-state, electronic memories, as clearly claimed and described by Applicant.

In all but one of the Examiner's rejections, the Examiner states that "Dobbeck teaches a solid-state data storage device ..." However, as discussed in the immediately preceding paragraph, Dobbeck does not teach anything concerning or related to solid-state data storage devices. In the remaining rejection, the Examiner states that "Dobbeck teaches the invention as claimed including the logic component ..." However, again, as discussed above, Dobbeck does not. All of the Examiner's rejections depend, at least in part, on Dobbeck teaching a solid-state data storage device. Therefore, in Applicant's representative's respectfully submitted opinion, all of these rejections must fail. In particular, the 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) rejections based solely on Dobbeck are clearly unfounded. None of the remaining cited references were deemed by the Examiner, in and of themselves, to disclose Applicant's claimed method and system, and Applicant's representative agrees that none, in fact, do so. Therefore, the remaining 35 U.S.C. § 103(a) rejections that depend, in part, on Dobbeck, are also clearly unfounded.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
William G. Hooper III
Olympic Patent Works PLLC

Robert W. Bergstrom
Registration No. 39,906

Enclosures:
Postcards (2)
Transmittal in duplicate

Olympic Patent Works PLLC
P.O. Box 4277
Seattle, WA 98194-0277
206.621.1933 telephone
206.621.5302 fax